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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
PADMANABHAN, KARTIC	
ART UNIT	**PAPER NUMBER**
1641	10

DATE MAILED: 04/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/848,777	AUDEH ET AL.	
	Examiner	Art Unit	
	Kartic Padmanabhan	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16,18-21 and 30-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16,18-21 and 30-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-6, 10, 14, 16, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Ness et al. (US Pat. 5,667,976). The reference discloses solid supports for nucleic hybridization assays, wherein nylon coated magnetic beads may be used (abstract and Col. 14). Oligonucleotides are immobilized via covalent attachment onto the beads and serve as probes (abstract and claim 1). The beads may be employed free in solution (abstract). The reference also discloses that the oligonucleotides immobilized on the beads can serve as electrophiles for the covalent attachment of proteins and antibodies. In addition, labels, such as colored labels (dyes), may be used in the hybridization assays.

3. Claims 1, 3-4, and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagai et al. (US Pat. 5,194,372). The reference discloses methods for detecting disorders, wherein fine particles in solution have at least two types of nucleic acid singles stranded probes immobilized thereon. The probes are complementary to first and second regions, respectively, and are exclusive of each other (see claim 1).

4. Claims 1, 3-4, 6-10, and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Delair et al. (US Pat. 6,033,853). The reference discloses a kit for detecting a nucleic acid sequence comprising a labeled nucleotide probe and a reagent consisting essentially of a suspension of insoluble particles on which at least one series of oligonucleotides are immobilized. The kit may be used in hybridization assays (abstract). The size of the particle may range from 50 nm to 5um (claim 7). The oligonucleotide probes may be immobilized on the particle via covalent binding or adsorption, and the label may be any known in the art, such as colored labels.

5. Claims 1, 3-6, 10, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawaguchi et al. (US Pat. 5,122,600). The reference discloses DNA immobilized microspheres, wherein the particle has a diameter of 0.1-50 uM. Protein may be adsorbed to the DNA immobilized particles for protein purification. DNA may be attached to the particles via adsorption or covalent attachment.

6. Claims 1, 3, 10, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Lewis et al. (WO 00/00808). The reference discloses colloidal particles used in sensing arrays, wherein the conductive portion may comprise nanoparticles that are optionally stabilized with organic ligands. The particle size can be manipulated and controlled (page 9). The ligands may be attached by various methods, including covalent and electrostatic attachment (page 10). The nanoparticles range in size from 1 nm to about 50 nm (page 10). The nanoparticles are dispersible in a wide variety of organic solvents (page 12).

7. Claims 1, 3-9, and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Seul (WO 97/40385). The reference discloses the manipulation of colloidal particles, wherein the

particles may be 1 or 10 microns in diameter (page 55). A plurality of types of molecules may be attached to the surfaces of the particles, wherein each particle has a plurality if particle of one type (page 58). The molecules may be oligonucleotides or protein. The particle or beads may also be labeled by any known conventional label, including colored labels.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seul (WO 97/40385), Lewis et al. (WO 00/00808), Kawaguchi et al., or Delair et al. (US Pat. 6,033,853).

The references teach colloidal particles, as discussed above under 35 USC 102. However, the references do not teach the colloids in powder form.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to remove the liquid in the colloidal suspensions of Seul, Lewis et al., Kawaguchi et al., or Delair et al. and arrive at a powdered form because powder is well known in the art to have greater stability and shelf life in comparison to a liquid from. In addition, such a form is easier to package in a kit, which provides increased convenience and economy. Also, a powder form may be easily reconstituted, as necessary, prior to use.

12. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et al. (US Pat. 5,194,372) or Van Ness et al. (US Pat. 5,667,976).

The references teach colloidal particles, as discussed above under 35 USC 102. However, the references do not teach the colloids in powder form.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to remove the liquid in the colloidal suspensions of Nagai et al. or Van Ness et al. and arrive at a powdered form because powder is well known in the art to have greater stability and shelf life in comparison to a liquid from. In addition, such a form is easier to package in a kit, which provides increased convenience and economy. Also, a powder form may be easily reconstituted, as necessary, prior to use.

13. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seul (WO 97/40385) or Nagai et al. (US Pat. 5,194,372). The references teach colloidal particles, as

previously discussed. However, the references do not teach the way in which molecules are attached to the particles.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to immobilize molecules to the particles of Seul or Nagai et al. via covalent, non-covalent, electrostatic, or adsorptive techniques because all are well known immobilization methods in the art, and one of skill would have had a reasonable expectation of success in using any of these methods to immobilize the molecules onto particles.

14. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Ness et al. (US Pat. 5,667,976). The reference teaches colloidal particles, as previously discussed. However, the reference does not teach the specific diameter of the particles.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to change the size of the particles to be within the range of the claims as an obvious matter of design choice. Such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

15. Claims 2, 16, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seul (WO 97/40385). The reference teaches colloidal particles, as previously discussed. However, the reference does not teach the use of nitrocellulose, PVF, or nylon as the matrix material.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to use nitrocellulose, PVF, or nylon as the matrix material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its

suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

16. Claims 2, 11, 13, 16, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (WO 00/00808). The reference teaches colloidal particles, as previously discussed. However, the reference does not teach non-covalent binding or adsorption to attach ligands or the specific type of matrix material.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to immobilize molecules to the particles of Lewis et al. via non-covalent or adsorptive techniques because all are well known immobilization methods in the art, and one of skill would have had a reasonable expectation of success in using any of these methods to immobilize the molecules onto particles. Further, Lewis et al. state that covalent and electrostatic attachment are only representative techniques and are non-limiting. In addition, the reference teaches the claimed invention except for the use of nitrocellulose, PVF, or nylon as the matrix material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use nitrocellulose, PVF, or nylon as the matrix material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

17. Claims 2, 11-12, 16, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi et al. (US Pat. 5,122,600). The reference teaches colloidal particles, as previously discussed. However, the reference does not teach non-covalent or electrostatic binding to attach molecules or the specific type of matrix material.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to immobilize molecules to the particles of Kawaguchi et al. via non-covalent or electrostatic binding because all are well-known immobilization methods in the art, and one of skill would have had a reasonable expectation of success in using any of these methods to immobilize the molecules onto particles. Further, Kawaguchi et al. state that the immobilization technique is not critical. In addition, the reference teaches the claimed invention except for the use of nitrocellulose, PVF, or nylon as the matrix material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use nitrocellulose, PVF, or nylon as the matrix material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

18. Claims 2, 11-12, 16, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delair et al. (US Pat. 6,033,853). The reference teaches colloidal particles, as previously discussed. However, the reference does not teach non-covalent or electrostatic binding to attach molecules or the specific type of matrix material.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to immobilize molecules to the particles Delair et al. via non-covalent or electrostatic binding because all are well-known immobilization methods in the art, and one of skill would have had a reasonable expectation of success in using any of these methods to immobilize the molecules onto particles. Further, the reference teaches the claimed invention except for the use of nitrocellulose, PVF, or nylon as the matrix material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use

nitrocellulose, PVF, or nylon as the matrix material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

19. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Ness et al. (US Pat. 5,557,976). The reference teaches colloidal particles, as previously discussed. However, the reference does not teach non-covalent or electrostatic binding, or adsorption to attach molecules.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to immobilize molecules to the particles Van Ness et al. via non-covalent or electrostatic binding, as well as adsorption because all are well-known immobilization methods in the art, and one of skill would have had a reasonable expectation of success in using any of these methods to immobilize the molecules onto particles.

Response to Arguments

20. Applicant's arguments filed 4/2/03 have been fully considered but are not persuasive.

21. Applicant's arguments that the beads of Van Ness are different than those claimed is not convincing. The beads of the reference are coated with nylon, which is sufficient to meet the requirements of the beads or particles claimed. Further, even assuming applicant's provided definition of "colloid" is the only definition to be found and thus requires that the particles not settle rapidly, applicant's assertion that the particles of Van Ness settle out of solution in such a manner as to fall outside the scope of this definition is a mere conclusion without any evidentiary support, which thus makes the assertion unconvincing on its face. It is noted that applicant's provided definition requiring a specific particle size with the additional requirement of resistance

to settlement is but one available definition of "colloid". Applicant is directed to Merriam Webster's Collegiate Dictionary, 10th Ed., (1996) and Silberberg, Chemistry: The Molecular Nature of Matter and Change (1996) for but two examples of varying definition of the term. Further, applicant's assertion that the reference fails to disclose the manner in which to make the claimed invention is moot, as the claims are not drawn to a method, but rather to the composition itself.

22. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the advantage of being able to perform cross-linking and blocking steps at the manufacturer level with reduction of variability and processing time) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

23. Applicant's arguments with respect to the Nagai reference are also unconvincing. As discussed above with respect to the Van Ness reference, applicant's assertion that the particles of Nagai settle out of solution in such a manner as to fall outside the scope of this definition is a mere conclusion without any evidentiary support, which thus makes the assertion unconvincing on its face. Further, applicant's contention that a colloid will not settle out is inaccurate. Even using the limited definition of "colloid" provided by applicant, the definition only states that the particles will not settle out rapidly. Applicant's arguments that the material of the beads of the reference are different than the present claims is moot, as only claims 2 and amended claim 16 specify the material of the particles, and the reference was not applied under 35 USC 102 to these claims. Further, applicant asserts that the particles will precipitate out, but as applicant

acknowledges, the reference contemplates a wide variety of materials for use with the reference, and clearly not all of them will precipitate out. In addition, applicant has once again failed to provide any support for this contention.

24. Applicant's arguments with respect to the Delair reference are also unconvincing. As discussed above with respect to the Van Ness and Nagai references, applicant's assertion that the particles of Nagai settle out of solution in such a manner as to fall outside the scope of this definition is a mere conclusion without any evidentiary support, which thus makes the assertion unconvincing on its face. Applicant's arguments that the material of the beads of the reference are different than the present claims is moot, as only claims 2 and amended claim 16 specify the material of the particles, and the reference was not applied under 35 USC 102 to these claims.

25. Applicant's arguments with respect to Kawaguchi are unconvincing for reasons discussed above regarding the other reference applied under 35 USC 102. Applicant's assertion that the particles of the reference will precipitate out is once again not adequately supported, which renders the argument prima facie unconvincing.

26. Applicant's arguments with respect to Lewis et al. are similarly unconvincing. Applicant contends that the particles of the reference are different than those claimed, but has failed to specify the nature of this difference. In addition, applicant argues that the claims require particles of nitrocellulose, PVF, or nylon, but these limitations are only present in claims 2 and amended claim 16, to which the reference was not applied under 35 USC 102.

27. With respect to Seul, the examiner agrees that the material of the particles of the reference differ from than those claimed, but only claims 2 and amended claim 16 recite the material of the particles.

28. Applicant's arguments with respect to rejections under 35 USC 103 depend primarily on the premise that the reference did not form the basis of proper rejections under 35 USC 102, a position that has been addressed and rejected.

Conclusion

Claims 1-16, 18-21, and 30-32 are rejected.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kartic Padmanabhan whose telephone number is 703-305-0509. The examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 703-305-3399. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-746-5207 for regular communications and 703-305-3014 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Kartic Padmanabhan
Patent Examiner
Art Unit 1641
*** KP
April 7, 2003

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04/08/03